CLAIMS

What is claimed is:

1. A virtual photonics switching system, the system comprising,

multiple photonics cross-connect network elements;

optical fibers connecting the network elements; and

an O-UNI server including,

at least one memory for storing information pertaining to said network elements,

a communication circuit for receiving a connectivity request from a first registered node for connection with a second registered node,

connection logic for determining compatibility of the first and second nodes, and

said communications circuit providing instructions to the network elements upon verifying compatibility to search for an end-to-end wavelength path and establish the connection between the first registered node and the second registered node.

2. The system of claim 1, wherein the O-UNI server further comprises a web menu for providing a user with a selection of available services.

3. The system of claim 1, wherein the connection logic determines technology compatibility.

4. The system of claim 1, wherein the multiple photonics cross-connect elements include service nodes, access nodes, and photonic switches.

5. The system of claim 4, wherein the service nodes comprise core routers or video servers.

6. The system of claim 4, wherein the access nodes comprise multiplexers or edge routers.

7. The system of claim 1, wherein the O-UNI server further comprises fault management tools for determining when an error has occurred in establishing a connection.

8. The system of claim 1, wherein the photonics network elements, the optical fibers, and the O-UNI server comprise a protocol agnostic private network, provided that communicating nodes use an identical communication protocol.

9. The system of claim 1, further comprising registration tools for registering nodes and collecting information including number of ports, wavelengths per port, and bandwidth per wavelength.

10. A method for establishing automatic service connectivity in a network between multiple network elements, each of said network elements utilizing routing and distribution protocols to discover its neighbors and establish a topology and optical fibers connecting the network elements, each optical fiber carrying multiple wavelengths of signals, wherein the network elements communicate with a server, the method comprising:

storing information pertaining to each of said network elements at the server;

registering network elements by collecting information about each network element;

receiving a connectivity request from a first registered node for connection with a second registered node;

determining compatibility of the first and second

registered nodes;

instructing network elements upon verifying compatibility to search for an end-to-end wavelength path and establish a connection between the first registered node and the second registered node.

11. The method of claim 10, further comprising providing the O-UNI server with a web menu for providing a user with a selection of available services.

12. The method of claim 10, wherein the step of determining compatibility comprises determining technology compatibility.

13. The method of claim 10, further comprising using service nodes, access nodes, and photonic switches as the multiple photonics cross-connect elements.

14. The method of claim 13, further comprising providing comprise core routers or video servers as service nodes.

15. The method of claim 13, further comprising providing multiplexers or edge routers as access nodes.

16. The method of claim 10, further comprising performing

fault management for determining when an error has occurred in establishing a connection.

17. The method of claim 10, further comprising forming a protocol agnostic private network provided that communicating nodes use an identical communication protocol.

18. The method of claim 10, wherein the step of registering network elements comprises collecting information including number of ports, wavelengths per port, and banwidth per wavelength.

19. An O-UNI server adaptable for use in a virtual photonics switching system, the O-UNI server comprising:

at least one memory for storing information pertaining to a plurality of network elements;

a communication circuit for receiving a connectivity request from a first registered node for connection with a second registered node;

connection logic for determining compatibility of the first and second nodes; and

said communications circuit providing instructions to the

network elements upon verifying compatibility to search for an end-to-end wavelength path and establish the connection between the first registered node and the second registered node.

20. The O-UNI server of claim 19, further comprising a web menu for providing a user with a selection of available services.

21. The O-UNI server of claim 19, wherein the connection logic determines technology compatibility.

22. The O-UNI server of claim 19, further comprising fault management tools for determining when an error has occurred in establishing a connection.

23. The O-UNI server of claim 19, further comprising registration tools for registering nodes and collecting information including number of ports, wavelengths per port, and bandwidth per wavelength.

24. The O-UNI server of claim 19, further comprising address management tools for address resolution and assignment.

25. The O-UNI server of claim 19, further comprising accounting management tools for managing data associated with

service usage.

26. The O-UNI server of claim 19, further comprising security management tools for managing allocation and authentication of access passwords of the nodes.